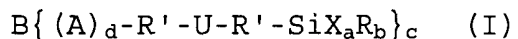


AMENDMENTS TO THE CLAIMS

1-17. (canceled).

18. (new) A method for preparing silicic acid polycondensates or silicic acid heteropolycondensates comprising hydrolytically condensing one or more hydrolytically condensable compounds of silicon, said hydrolytically condensable compound optionally comprising one or more elements selected from the group consisting of B, Al, P, Sn, Pb, the transition metals, the lanthanides and the actinides, said condensable compound optionally comprising precondensates of the compound; the reaction optionally comprising one or more of (i) a catalyst, (ii) a solvent, (iii) an ionically condensable compound and (iv) a free-radical condensable compound; wherein 5 to 100 % mol% based on monomeric compounds of the hydrolytically condensable compounds are silanes of the general formula I:



in which:

B is a mono- to tetravalent, straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

- X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR''_2 ;
- R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;
- R' is alkylene, alkenylene, arylene, arylenealkylene or alkylenearylene having 2 to 10 carbon atoms, these radicals being able to be interrupted by oxygen and sulphur atoms or by amino groups;
- R'' is hydrogen, alkyl or aryl;
- U is an inorganically modified organic radical comprising a siloxane or carbosiloxane framework having at least two atoms that are silicon or germanium or a carbosilane framework having at least one atom that is silicon or germanium, said framework having 1 to 15 C atoms and up to 5 additional heteroatoms that are O, S or N;
- A is $\text{C}(=\text{O})\text{O}$, $\text{OC}(=\text{O})\text{O}$, $\text{C}(=\text{O})$, O, S, $\text{C}(=\text{O})\text{NR}''$, $\text{OC}(=\text{O})$, or $\text{NR}''\text{C}(=\text{O})$;
- a = 1, 2 or 3;
- b = 0, 1 or 2;
- a+b = 3;
- c = 1, 2, 3 or 4; and
- d = 0 or 1.

19. (new) The method of claim 18, wherein

B is a mono- to tetravalent, straight-chained or branched organic radical with at least one C=C double bond and 4 to 30 carbon atoms;

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl;

R is alkyl, alkenyl or aryl;

R' is alkylene, alkenylene, arylene, arylenealkylene or alkylenearylene having 2 to 5 carbon atoms, these radicals being able to be interrupted by oxygen and sulphur atoms or by amino groups;

A is C(=O)O, OC(=O)O, C(O), O, OC(=O);

U is an inorganically modified organic radical comprising a siloxane or carbosiloxane framework having at least two atoms that are silicon or germanium or a carbosilane framework having at least one atom that is silicon or germanium, said framework having 1 to 15 C atoms and up to 5 additional heteroatoms that are O or N;

a = 1, 2 or 3;

b = 0, 1 or 2;

a+b = 3;

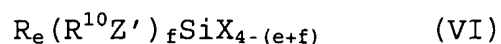
c = 1, 2, 3 or 4; and

d = 0 or 1.

20. (new) The method according to claim 18 wherein an ionically condensable compound or a free-radically condensable compound is present in the reaction.

21. (new) The method according to claim 19 wherein an ionically condensable compound or a free-radically condensable compound is present in the reaction.

22. (new) The method according to claim 18, wherein the reaction mixture further comprises one or more compounds of the general formula VI, optionally in precondensed form, as an additional hydrolytically condensable compound of silicon:



in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR²;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R² is hydrogen, alkyl or aryl;

R¹⁰ is alkylene or alkenylene, these radicals being able to be interrupted by oxygen or sulphur atoms or -NH groups;

Z' is halogen or an optionally substituted amino, amide, aldehyde, alkylcarbonyl, carboxy, mercapto, cyano,

alkoxy, alkoxycarbonyl, sulfonic acid, phosphoric acid,
acyloxy, methacryloxy, epoxy or vinyl group;

e = 0,1,2 or 3; and

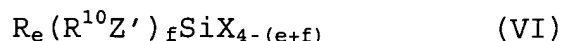
f = 0,1,2 or 3, with e + f = 1,2 or 3.

23. (new) The method according to claim 22, in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or
alkylcarbonyl; and

R is alkyl, alkenyl or aryl.

24. (new) The method according to claim 19, wherein the reaction
mixture further comprises one or more compounds of the general
formula VI, optionally in precondensed form, as an additional
hydrolytically condensable compound of silicon:



in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy,
alkylcarbonyl, alkoxycarbonyl or NR²;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R² is hydrogen, alkyl or aryl;

R¹⁰ is alkylene or alkenylene, these radicals being able to be
interrupted by oxygen or sulphur atoms or -NH groups;

Z' is halogen or an optionally substituted amino, amide, aldehyde, alkylcarbonyl, carboxy, mercapto, cyano, alkoxy, alkoxycarbonyl, sulfonic acid, phosphoric acid, acryloxy, methacryloxy, epoxy or vinyl group;

e = 0,1,2 or 3; and

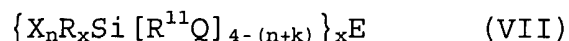
f = 0,1,2 or 3, with e + f = 1,2 or 3.

25. (new) The method according to claim 24, in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

R is alkyl, alkenyl or aryl.

26. (new) The method according to claim 18, wherein the reaction mixture further comprises one or more compounds of the general formula VII, optionally in precondensed form, as an additional hydrolytically condensable compound of silicon:



in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR²;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R² is hydrogen, alkyl or aryl;

Q is O, S, PR', POR', NHC(O)O or NHC(O)NR², with R² being hydrogen, alkyl or aryl;

E is straight-chained or branched organic radical comprising 5 to 50 carbon atoms at least one double bond if Q is $\text{NHC}(=\text{O})\text{O}$ or $\text{NHC}(=\text{O})\text{NR}''$ or otherwise at least two $\text{C}=\text{C}$ bonds;

R^{11} is alkylene, arylene or alkylenearylene;

n = 1, 2 or 3;

k = 0, 1 or 2;

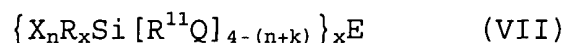
x is an integer, the maximum value of which corresponds to the number of double bonds in the radical E minus 1 or is equal to the number of double bonds in the radical E, if Q is $\text{NHC}(=\text{O})\text{O}$ or $\text{NHC}(=\text{O})\text{NR}''$.

27. (new) The method according to claim 26, in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

R is alkyl, alkenyl or aryl.

28. (new) The method according to claim 19, wherein the reaction mixture further comprises one or more compounds of the general formula VII, optionally in precondensed form, as an additional hydrolytically condensable compound of silicon:



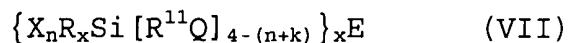
in which

- X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR''^2 ;
- R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;
- R'' is hydrogen, alkyl or aryl;
- Q is O, S, PR' , POR' , NHC(O)O or $\text{NHC(O)NR}''$, with R'' being hydrogen, alkyl or aryl;
- E is straight-chained or branched organic radical comprising 5 to 50 carbon atoms at least one double bond if Q is NHC(=O)O or $\text{NHC(=O)NR}''$) or otherwise at least two C=C bonds;
- R^{11} is alkylene, arylene or alkylenearylene;
- n = 1, 2 or 3;
- k = 0, 1 or 2;
- x is an integer, the maximum value of which corresponds to the number of double bonds in the radical E minus 1 or is equal to the number of double bonds in the radical E, if Q is NHC(=O)O or $\text{NHC(=O)NR}''$.

29. (new) The method according to claim 28, in which

- X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and
- R is alkyl, alkenyl or aryl.

30. (new) The method according to claim 20, wherein the reaction mixture further comprises one or more compounds of the general formula VII, optionally in precondensed form, as an additional hydrolytically condensable compound of silicon:



in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR²;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R² is hydrogen, alkyl or aryl;

Q is O, S, PR', POR', NHC(O)O or NHC(O)NR², wherein R² is hydrogen, alkyl or aryl;

E is straight-chained or branched organic radical comprising 5 to 50 carbon atoms at least one double bond if Q is NHC(=O)O or NHC(=O)NR²) or otherwise at least two C=C bonds;

R¹¹ is alkylene, arylene or alkylenearylene;

n = 1, 2 or 3;

k = 0, 1 or 2;

x is an integer, the maximum value of which corresponds to the number of double bonds in the radical E minus 1 or is equal to the number of double bonds in the radical E, if Q is NHC(=O)O or NHC(=O)NR².

31. (new) The method according to claim 30, in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

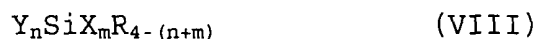
R is alkyl, alkenyl or aryl.

32. (new) The method according to claim 26, wherein the radical E derives from a substituted or unsubstituted compound comprising two or more acrylate and/or methacrylate groups.

33. (new) The method according to claim 28, wherein the radical E derives from a substituted or unsubstituted compound comprising two or more acrylate and/or methacrylate groups.

34. (new) The method according to claim 30, wherein the radical E derives from a substituted or unsubstituted compound comprising two or more acrylate and/or methacrylate groups.

35. (new) The method according to claim 18, in which the reaction comprises at least one compound the general formula VIII, optionally in precondensed form, as an additional hydrolytically condensable compound of silicon:



in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR^2 ;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R^2 is hydrogen, alkyl or aryl;

Y is a substituent that comprises a substituted or unsubstituted 1,4,6-trioxaspiro-[4,4]-nonane radical;

n = 1, 2 or 3; and

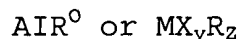
m = 1, 2 or 3, and $n + m \leq 4$.

36. (new) The method according to claim 35, in which

X = hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

R = alkyl, alkenyl or aryl.

37. (new) The method according to claim 18, wherein one or more aluminium, titanium or zirconium compounds, soluble in the reaction medium, of the formula:



are used, optionally in precondensed form, as an additional hydrolytically condensable compound in which

M is titanium or zirconium;

the radicals R, R° and X are the same or different;

R° is halogen, hydroxy, alkoxy or acyloxy;

y = 1, 2, 3 or 4;

z = 0, 1, 2 or 3; and

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR²;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl; and

R² is hydrogen, alkyl or aryl.

38. (new) The method according to claim 37, in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

R is alkyl, alkenyl or aryl.

39. (new) The method according to claim 38, in which y = 2, 3 or 4.

40. (new) The method according to claim 39, in which z = 0, 1 or 2.

41. (new) The method according to claim 40, in which y = 2, 3 or 4.

42. (new) The method according to claim 18, wherein one or more initiators are added to the polycondensate, and the

polycondensate is then cured thermally, photochemically, in a covalent-nucleophilic manner or by redox-induction.

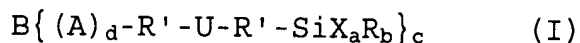
43. (new) A method for preparing a polymer comprising radical polymerizing one or more compounds that comprise at least one C=C double bond and optionally other radically polymerizable compounds;

the reaction mixture optionally further comprising one or more ionically polymerizable compounds and the process optionally further comprising ionically polymerizing said ionically polymerizable compounds by one or more of heating, irradiating the reaction with electromagnetic radiation, a redox-induction or a covalent-nucleophilic reaction,

the reaction mixture optionally further comprising one or more hydrolytically condensable compounds of silicon and optionally other elements selected from the group consisting of B, Al, Sn, Pb, the transition metals, the lanthanides and the actinides, and/or precondensates derived from said hydrolytically condensable compounds and the process further optionally comprising hydrolytically condensing said hydrolytically condensable compounds of silicon;

the reaction mixture still further optionally comprising one or more initiators and/or a solvent;

wherein 5 to 100 mol% based on monomeric compounds are selected from silanes of formula I:



in which:

- B is a mono- to tetravalent, straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;
- X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR²;
- R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;
- R' is alkylene, alkenylene, arylene, arylenealkylene or alkylenearylene having 2 to 10 carbon atoms, these radicals being able to be interrupted by oxygen and sulphur atoms or by amino groups;
- R² is hydrogen, alkyl or aryl;
- U is an inorganically modified organic radical comprising a siloxane or carbosiloxane framework having at least two atoms that are silicon or germanium or a carbosilane framework having at least one atom that is silicon or germanium, said framework having 1 to 15 C atoms and up to 5 additional heteroatoms that are O, S or N;
- A is C(=O)O, OC(=O)O, C(=O), O, S, C(=O)NR², OC(=O), or NR²C(=O);
- a = 1, 2 or 3;

b = 0,1 or 2;
 a+b = 3;
 c = 1,2,3 or 4; and
 d = 0 or 1.

44. (new) The method of claim 43, wherein

B is a mono- to tetravalent, straight-chained or branched organic radical with at least one C=C double bond and 4 to 30 carbon atoms;

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl;

R is alkyl, alkenyl or aryl;

R' is alkylene, alkenylene, arylene, arylenealkylene or alkylenearylene having 2 to 5 carbon atoms, these radicals being able to be interrupted by oxygen and sulphur atoms or by amino groups;

A is C(=O)O, OC(=O)O, C(O), O or OC(=O);

U is an inorganically modified organic radical comprising a siloxane or carbosiloxane framework having at least two atoms that are silicon or germanium or a carbosilane framework having at least one atom that is silicon or germanium, said framework having 1 to 15 C atoms and up to 5 additional heteroatoms that are O or N;

a = 1,2 or 3;

b = 0, 1 or 2;

a+b = 3;

c = 1, 2, 3 or 4; and

d = 0 or 1.

45. (new) The method of claim 44, in which one or more silanes of the general formula VIII are used as cationically polymerizable compounds:



in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR²;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

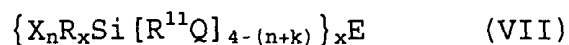
R² is hydrogen, alkyl or aryl;

Y is a substituent that comprises a substituted or unsubstituted 1,4,6-trioxaspiro-[4,4]-nonane radical;

n = 1, 2 or 3; and

m = 1, 2 or 3, and n + m < 4.

46. (new) The method according to claim 43, wherein the reaction mixture further comprises one or more compounds of the general formula VII, optionally in precondensed form, as an additional hydrolytically condensable compound of silicon:



in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR²;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R² is hydrogen, alkyl or aryl;

Q is O, S, PR¹, POR¹, NHC(O)O or NHC(O)NR², wherein R² is hydrogen, alkyl or aryl;

E is straight-chained or branched organic radical comprising 5 to 50 carbon atoms at least one double bond if Q is NHC(=O)O or NHC(=O)NR²) or otherwise at least two C=C bonds;

R¹¹ is alkylene, arylene or alkylenearylene;

n = 1, 2 or 3;

k = 0, 1 or 2;

x is an integer, the maximum value of which corresponds to the number of double bonds in the radical E minus 1 or is equal to the number of double bonds in the radical E, if Q is NHC(=O)O or NHC(=O)NR².

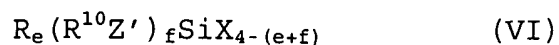
47. (new) The method according to claim 43, wherein the reaction mixture comprises at least one hydrolytically condensable compound of silicon and optionally other elements from the group

consisting of B, Al, Sn, Pb, the transition metals, the lanthanides and the actinides, and/or precondensates derived from said hydrolytically condensable compound, and the process further comprises a step of hydrolytically condensing said at least one hydrolytically condensable compound.

48. (new) The method according to claim 44, wherein the reaction mixture comprises at least one hydrolytically condensable compound of silicon and optionally other elements from the group consisting of B, Al, Sn, Pb, the transition metals, the lanthanides and the actinides, and/or precondensates derived from said hydrolytically condensable compound, and the process further comprises a step of hydrolytically condensing said at least one hydrolytically condensable compound.

49. (new) according to claim 45, wherein the reaction mixture comprises at least one hydrolytically condensable compound of silicon and optionally other elements from the group consisting of B, Al, Sn, Pb, the transition metals, the lanthanides and the actinides, and/or precondensates derived from said hydrolytically condensable compound, and the process further comprises a step of hydrolytically condensing said at least one hydrolytically condensable compound.

50. (new) The method according to claim 43, in which the reaction mixture comprises one or more compounds of the general formula VI, optionally in precondensed form, as at least one hydrolytically condensable compound of silicon:



in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR^2 ;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R'' is hydrogen, alkyl or aryl;

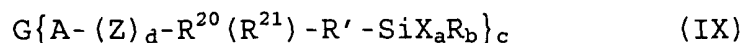
R^{10} is alkylene or alkenylene, these radicals being able to be interrupted by oxygen or sulphur atoms or -NH groups;

Z' is halogen or an optionally substituted amino, amide, aldehyde, alkylcarbonyl, carboxy, mercapto, cyano, alkoxy, alkoxycarbonyl, sulfonic acid, phosphoric acid, acryloxy, methacryloxy, epoxy or vinyl group;

e = 0, 1, 2 or 3; and

f = 0, 1, 2 or 3, with $e + f = 1, 2$ or 3 .

51. (new) The process according to claim 18, wherein the reaction mixture further comprises one or more compounds of the general formula IX, optionally in precondensed form, as at least one condensable compound of silicon:



in which:

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxy carbonyl or NR^{22} ;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R^{22} is hydrogen, alkyl or aryl; and

G is a straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

d = 1;

A is O, S or NH;

Z is C=O;

R^{20} is alkylene, arylene or alkylenearylene comprising 1 to 10 carbon atoms, and optionally interrupted by one or more atom of oxygen or sulfur or by one or more amino group;

R^{21} is COOH;

or

G is a straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

d = 1

A is O, S, or NH;

Z is C=O;

R^{20} is alkylene, arylene or alkylenearylene comprising
1 to 10 carbon atoms, and optionally interrupted by one
or more atom of oxygen or sulfur or by one or more
amino groups;

R^{21} is H;

or

G is a straight-chained or branched organic radical with at
least one C=C double bond and 4 to 50 carbon atoms;

d = 1

A is O, S, NH or COOH;

Z is C=O;

R^{20} is alkylene, arylene or alkylenearylene comprising
1 to 10 carbon atoms, and optionally interrupted by one
or more atom of oxygen or sulfur or by one or more amino
groups;

R^{21} is OH;

or

G is a straight-chained or branched organic radical with at
least one C=C double bond and 4 to 50 carbon atoms;

d = 0

A is O, S, NH or COOH;

R^{20} is alkylene, arylene or alkylenearylene comprising

1 to 10 carbon atoms, and optionally interrupted by one or more atom of oxygen or sulfur or by one or more amino group;

R^{21} is OH;

or

G is a straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

d = 1;

A is S;

Z is C=O;

R^{20} is N;

R^{21} is H;

and

a = 1, 2 or 3;

b = 0, 1 or 2;

a+b = 3;

c = 1, 2, 3 or 4.

52. (new) The method of claim 51, in which

X = hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

R = alkyl, alkenyl or aryl.

53. (new) A polymer made by the process of claim 18.

54. (new) A dental filling material, dental cement, dental crown, dental bridge, dental facing material, dental lacquer, dental sealer, dental adhesion promoter, dental primer or dental bonder comprising a polymer made by the process of any one of claims 22-25.